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(54) Title: PHYSIOLOGICALLY ACCEPTABLE AQUEOUS SOLUTIONS AND METHODS FOR THEIR USE

(57) Abstract

Physiologically acceptable aqueous solutions and methods for their use are provided. The subject solutions comprise: electrolytes; a dymamic buffering system and an oncotic agent; and do not comprise a conventional biological buffer. The subject solutions find use in a variety of applications, particularly in those applications where at least a portion of a host's blood volume is replaced with a blood substitute.

WHAT IS CLAIMED IS:

1. A physiologically acceptable aqueous solution comprising:

electrolytes;

a dynamic buffering system; and

at least one oncotic agent;

wherein said solution comprises at least two of magnesium, a sugar in an amount of not more than about 50 mM and a medium or high molecular weight oncotic agent, and further wherein said solution does not comprise a biological buffer.

2. A physiologically acceptable aqueous solution comprising:

electrolytes;

a dynamic buffering system; and

at least one oncotic agent, wherein said at least one oncotic agent is a medium or high molecular weight hydroxyethyl starch;

wherein said solution does not comprise a biological buffer.

3. The solution according to Claims 1 or 2, wherein said dynamic buffering system comprises a carboxylic acid, salt or ester thereof.

4. The solution according to Claims 1, 2 or 3, wherein said dynamic buffering system further comprises bicarbonate.

5. The solution according to any of the previous claims, wherein said solution further comprises a cryoprotective agent.

6. The solution according to any of the previous claims, wherein said oncotic agent is a polysaccharide.

7. The solution according to any of the previous claims, wherein said polysaccharide is a hydroxyethyl starch.

8. The solution according to Claim 7, wherein said hydroxyethyl starch is a

medium molecular weight hydroxyethyl starch.

9. The solution according to Claim 7, wherein said hydroxyethyl starch is a high molecular weight hydroxyethyl starch.

10. The solution according to Claim 8, wherein said hydroxyethyl starch has between 6 and 7 hydroxyethyl groups for every 10 monomeric units and is present in a concentration of about 6 %, wherein said solution comprises glucose in not more than about 50 mM.

11. The solution according to Claim 8, wherein said hydroxyethyl starch has between 4 and 5 hydroxyethyl groups for every 10 monomeric units and is present in a concentration of about 6 %, wherein said solution comprises glucose in not more than about 50 mM.

12. The solution according to Claim 9, wherein said hydroxyethyl starch has between 7 and 8 hydroxyethyl groups for every 10 monomeric units and is present in a concentration of about 6 %, wherein said solution comprises glucose in not more than about 50 mM.

13. The solution according to any of the preceding claims, where said electrolytes comprise sodium, potassium, calcium, chloride ion and magnesium.

14. The solution according to any of the preceding claims, wherein said solution further comprises a clotting factor.

15. In a method where an aqueous composition is introduced into the circulatory system of a host or portion thereof, the improvement comprising using the physiologically acceptable aqueous solution according to any of the preceding claims as the plasma substitute solution.